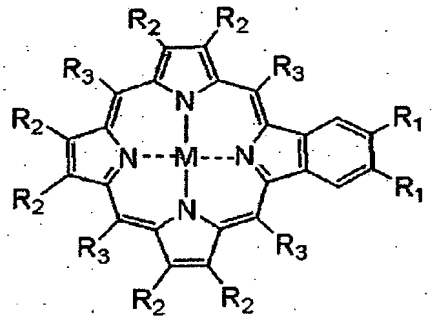
CLAIMS

1. A field effect transistor comprising an organic semiconductor layer comprising a compound having a monobenzoporphyrin skeleton represented by the general formula (1):



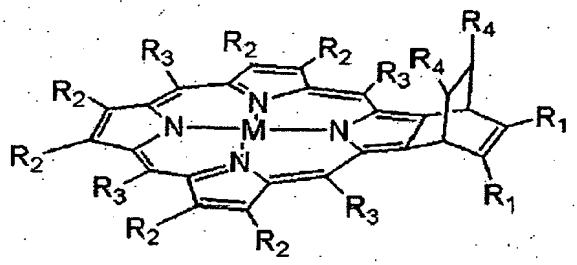
wherein R_1 and R_2 are independently selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxyl group, and alkyl, alkenyl, oxyalkyl, thioalkyl, alkyl ester and aryl groups each having 1 to 12 carbon atoms with the proviso that adjacent R_1 may be the same or different and adjacent R_2 may be the same or different and that at least two of R_2 are not hydrogen atoms; R_3 is a hydrogen atom or an aryl group; and M denotes two hydrogen atoms, a metal atom or a metal oxide.

2. The field effect transistor according to claim 1, wherein the organic semiconductor layer has at least one peak at Bragg angle (2θ) 7.8° ± 0.2° in terms of Cu K-alpha X-ray diffraction.

3. The field effect transistor according to claim 1 or 2, wherein R_1 and R_3 of the monobenzoporphyrin compound represented by the general formula (1) are hydrogen atoms and at least two of R2 are alkyl groups having 1 to 12 carbon atoms.

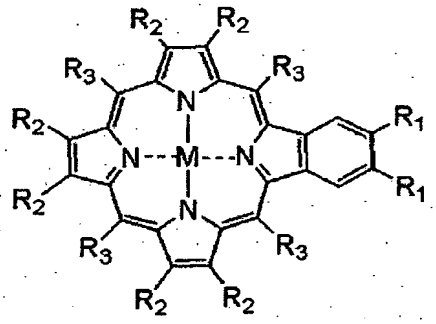
4. The field effect transistor according to any one of claims 1 to 3, wherein M of the monobenzoporphyrin compound represented by the general formula (1) is two hydrogen atoms or one copper atom.

5. A method of producing a field effect transistor, which comprises the step of heating a monobicycloporphyrin compound represented by the general formula (2):



wherein R_1, R_2 and R_4 are independently selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxyl group, and alkyl, alkenyl, oxyalkyl, thioalkyl, alkyl ester, and aryl groups each having 1 to 12 carbon atoms with the proviso that adjacent R_1 may be the same or different and adjacent R_2 may be

the same or different and that at least two of R_2 are not hydrogen atoms; R_3 is a hydrogen atom or an aryl group; and M denotes two hydrogen atoms, a metal atom or a metal oxide, to effect conversion to a monobenzoporphyrin compound represented by the general formula (1):



wherein R_1, R_2, R_3, and M are as above defined.

6. The method of producing a field effect transistor according to claim 5, wherein the monobicycloporphyrin compound represented by the general formula (2) is heated at a temperature between 130°C to 250°C to be converted to the monobenzoporphyrin compound represented by the general formula (1).

7. A field effect transistor comprising an organic semiconductor layer comprising a compound having a monobenzoporphyrin skeleton and having at least one peak at Bragg angle (2θ) 7.8° ± 0.2° in terms of Cu K-alpha X-ray diffraction.